

PREVENTION, PRECAUTION, LOGIC AND LAW

THE RELATIONSHIP BETWEEN THE PRECAUTIONARY PRINCIPLE AND THE PREVENTATIVE PRINCIPLE IN INTERNATIONAL LAW AND ASSOCIATED QUESTIONS

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Abstract

The main purpose of this article is to promote clarification of the relationship between the precautionary principle and the prevent(at)ive principle in public international law. One of the questions addressed in this connection is whether the presence of uncertainty is a condition for the applicability of the precautionary principle. The article stresses and discusses the distinction between preventative and precautionary logic on the one hand and the corresponding legal principles on the other hand. It concludes, among other things, that in the international law of the environment the precautionary principle must be regarded as having absorbed the preventative principle or, alternatively, as being its most developed form. The widespread endorsement of the precautionary principle has thus made the continued existence of a separate preventative principle in international law superfluous.

1 Introduction

An advantage of writing on the precautionary principle is that one is never short of thought-provoking quotes to choose from in order to enliven a publication. An example is the following:

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The precautionary principle may well be the most innovative, pervasive, and significant new concept in environmental policy over the past quarter century. It may also be the most reckless, arbitrary, and ill-advised.¹

Few readers of this issue of *Erasmus Law Review* will be unaware of the many discussions that have taken and continue to take place on the pros and cons of the precautionary principle. Rather than taking sides, the focus of the present article, like the studies on which it builds, is on the *clarification* of the role and implications of the precautionary principle in contemporary international law, so as to, among other things, facilitate the discussions referred to. In particular, the main purpose of this contribution is to promote clarification of the relationship between the precautionary principle and what is termed the preventative principle in public international law. Dedicating a full article to this issue appears warranted, in light of the confusion that continues to surround it. A number of separate queries will need to be addressed in order to achieve the aforementioned purpose, including whether the presence of uncertainty is a condition for the applicability of the precautionary principle. Furthermore, to attain a better understanding of the relationship between the two principles involved, it is crucial to distinguish between preventative and precautionary *logic* on the one hand and the corresponding legal *principles* on the other, and to carefully distinguish, generally speaking, between theory and practice.

The relationship between the precautionary and the preventative principle and a few of the above-mentioned related issues have been addressed previously by the current author, albeit on a more modest scale, and the current contribution incorporates and builds on that prior research.² The article is structured as follows: Section 2 provides a benchmark by briefly sketching the basic attributes of the precautionary principle under international law; Section 3 discusses the characteristics of, and differences between, preventative logic and the preventative principle; Section 4 performs the same exercise with respect to precaution; Section 5 examines the differences between preventative and precautionary logic; Section 6 focuses on the relationship between the preventative and precautionary *principles*; and Section 7 contains concluding remarks. To lift the veil somewhat, the article concludes among other things that the widespread endorsement of the precautionary principle has made

¹ G.E. Marchant and K.L. Mossman, *Arbitrary and Capricious: The Precautionary Principle in the European Union Courts* (London: AEI Press 2004) at 1.

² See in particular A. Trouwborst, *Evolution and Status of the Precautionary Principle in International Law* (The Hague, London, New York: Kluwer Law International 2002) at 35; A. Trouwborst, *Precautionary Rights and Duties of States* (Leiden, Boston: Martinus Nijhoff Publishers 2006) at 91; A. Trouwborst, 'De Harde Kern van het Voorzorgsbeginsel' (2007) 34 *Tijdschrift voor Milieu en Recht* 198 at 203; A. Trouwborst, 'The Precautionary Principle in General International Law: Combating the Babylonian Confusion' (2007) 16 *Review of European Community and International Environmental Law* 185 at 191.

superfluous the continued existence of a separate preventative principle in international law.

2 Point of departure: the precautionary principle in a nutshell

A succinct description of the basic features of the precautionary principle is provided here to set the stage and to define the starting point for the analysis below.³

The rationale of the precautionary principle – or precautionary approach, as it is often referred to – is a dual one. That is to say, two scientific insights account for the adoption by States of the precautionary principle. Plainly stated, the first is the realisation that in many cases the environmental harm caused by human activities is graver than previously thought and can be difficult, if not impossible, to undo. Due to the vulnerability of the environment, anthropogenic impacts are often of a long-term and sometimes irreversible nature. The second insight making up the rationale of the precautionary principle concerns the uncertainty about, and limited predictability of, the gravity and probability of environmental impacts, which is due in a significant measure to the complexity and variability of natural systems and processes. In international law and policy, the precautionary principle is part of a recent trend from reactive and fragmented environmental policies towards more proactive and holistic approaches. Within this context, it is closely linked to the ecosystem approach.⁴ In addition, the application of the precautionary principle is widely regarded as essential for the achievement of sustainable development, which is commonly defined as development in a way and at a rate that suits the needs of present generations of human beings without

³ Selected introductions to the principle, all of which contain lists of further literature, are E. Hey, 'The Precautionary Concept in Environmental Policy and Law: Institutionalizing Caution' (1992) 4 *Georgetown International Environmental Law Review* 303; N. de Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (Oxford: Oxford University Press 2002); P. Harremoes and others, *Late Lessons from Early Warnings: The Precautionary Principle 1896-2000* (London: Earthscan 2002); W.Th. Douma, *The Precautionary Principle: Its Application in International, European and Dutch Law* (Groningen: dissertation 2003); J. Peel, *The Precautionary Principle in Practice* (Annandale: The Federation Press 2005); Trouwborst (2006), above n. 2; and Trouwborst (2007b), above n. 2. Much of the remainder of this section is a summary of the last two sources mentioned.

⁴ On the relationship between the precautionary principle and the ecosystem approach, see A. Trouwborst, 'The Precautionary Principle and the Ecosystem Approach in International Law: Differences, Similarities and Linkages' (2009) 18 *Review of European Community and International Environmental Law* 26.

compromising the ability of future generations to meet theirs.⁵

The purpose of the precautionary principle is the adequate protection of the environment, both for its own sake and for the good of humankind. The classic statement in Principle 15 of the 1992 Rio Declaration, for instance, prescribes the principle's wide application by States '[i]n order to protect the environment.'⁶ Generally speaking, the precautionary principle calls for action at an early stage in response to threats of environmental harm, including in situations of scientific uncertainty. Applying the principle means giving the benefit of the doubt to the environment: *in dubio pro natura*.

The precautionary principle made its express entry on the intergovernmental stage a little over twenty years ago, at a regional conference for the protection of the North Sea.⁷ This was the beginning of a rapid development. Within five years it had been practically universally accepted as a central principle of international environmental law, an acceptance that was sealed in Rio de Janeiro at the 1992 UN Conference on Environment and Development (UNCED). Currently, the precautionary principle can be found in a great variety of intergovernmental declarations, resolutions, and action programmes and, moreover, in or under more than sixty multilateral treaties covering myriad environmental issues. The principle has also become a prominent tenet of European Union (EU) environmental law and policy. In response to these international developments, growing numbers of States are implementing the precautionary principle in domestic environmental laws and policies.

Already by the early 1990s, the application of the principle by States had become so widespread and consistent that the customary international law question came into play. An analysis carried out a decade later, testing the relevant conduct and statements of States against the generally accepted standards on the formation of customary or general international law, and taking account also of international jurisprudence and doctrine, prompted the conclusion that the core content of the precautionary principle had by then indeed attained the status of customary international law.⁸ As one judge put it in a recent case before the International Court of Justice (ICJ), 'the precautionary principle is not an abstraction or an academic component of desirable soft law, but a rule of law within general international law as it stands

⁵ See for example World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press 1987).

⁶ Declaration on Environment and Development, 14 June 1992, UN Doc. A/CONF.151/5/Rev.1.

⁷ Declaration of the Second International Conference on the Protection of the North Sea, 25 November 1987, para. XVI.

⁸ See Trouwborst (2002), above n. 2, at 33; see also Trouwborst (2006), above n. 2, at 8; and Trouwborst (2007b), above n. 2, at 187 and 194.

today.⁹ To illustrate the practical significance of this conclusion, it is worth noting that States have repeatedly invoked the principle as a norm of general international law in international judicial proceedings, including three times before the International Tribunal for the Law of the Sea (ITLOS) in Hamburg (Australia and New Zealand,¹⁰ Ireland,¹¹ and Malaysia¹²) and four times before the ICJ in The Hague (New Zealand,¹³ Hungary,¹⁴ Argentina,¹⁵ and Ecuador¹⁶). In the most recently instigated and currently pending case, Ecuador claims that by 'aerially spraying toxic herbicides at, near, and over its border with Ecuador,' Colombia has failed to act in a sufficiently precautionary manner.¹⁷ Examples of application of the precautionary principle as a norm of customary international law at the national level include judgments by the Supreme Courts of India¹⁸ and Canada¹⁹ concerning environmental pollution by, respectively, the leather industry and pesticides.

The analysis of the precautionary principle's legal status just referred to was complemented more recently with another study aimed at determining as precisely as possible what it is that the precautionary principle requires as a matter of general international law.²⁰ A search was carried out for patterns and common denominators in the numerous germane sources, including treaties, declarations, decisions of international organisations, programmes of action, statements in judicial proceedings, and domestic legislation and jurisprudence. These were placed in context through a multidisciplinary investigation of the precautionary principle's ecological and economic background, as well as an analysis of relevant international case law and literature. The main findings regarding the principle's definition and implementation are summed up by way

⁹ *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Dissenting Opinion of Judge *ad hoc* Vinuesa, appended to the ICJ Order on Provisional Measures of 13 July 2006.

¹⁰ *Southern Bluefin Tuna (Requests for Provisional Measures) (New Zealand v. Japan; Australia v. Japan)*, 38 ILM (1999) 1624.

¹¹ *MOX Plant (Request for Provisional Measures) (Ireland v. UK)*, 41 ILM (2002) 405.

¹² *Land Reclamation (Request for Provisional Measures) (Malaysia v. Singapore)*, ITLOS Case No. 12, 8 October 2003.

¹³ *Nuclear Tests (New Zealand v. France)*, ICJ Reports (1995) 288.

¹⁴ *Gabcíkovo-Nagymaros (Hungary v. Slovakia)*, ICJ Reports (1997) 7.

¹⁵ *Pulp Mills*, above n. 9.

¹⁶ *Aerial Herbicide Spraying (Ecuador v. Colombia)*, proceedings instigated 31 March 2008.

¹⁷ *Id.*, Application by Ecuador (March 31, 2008), par. 37.

¹⁸ *Vellore Citizens' Welfare Forum v. Union of India*, 5 SCC 647, AIR (SC) (1996) 2715.

¹⁹ *Spray-Tech v. Hudson*, 19 MPLR (3d) 1; see J. Abouchar, 'Case Notes: Spray-Tech v. Hudson (Ville)' (1999) 11 *Review of European Community and International Environmental Law* 104.

²⁰ Trouwborst (2006), above n. 2.

of concluding the present section.

'In dubio pro natura' and 'erring on the side of environmental protection' accurately reflect the gist of the precautionary principle in general international law. In particular, the following definition of a duty of States to take precautionary action is deemed representative of the current state of the law:

Wherever, on the basis of the best information available, there are reasonable grounds for concern that serious and/or irreversible harm to the environment may be caused, effective and proportional action to prevent and/or abate this harm must be taken, including in the face of scientific uncertainty regarding the cause, extent and/or probability of the potential harm.²¹

As indicated by the minimum thresholds of probability ('reasonable grounds for concern') and gravity ('serious and/or irreversible') of anticipated harm, not every chance of any adverse impact is supposed to trigger action.

As for implementation, the condition of effectiveness requires that a course of action is chosen that effectively safeguards the endangered part of the environment. The proportionality criterion demands that this course of action correspond to the size (probability and gravity) of the risk involved, so as to avoid adoption of excessively strict measures. The greater the aggregate risk, the more rigorous the precautionary action to match it, and vice versa. As a matter of general international law, there is, however, no requirement for precautionary measures to be cost-effective in the traditional, strictly economic sense. Various guidelines help establish what, in concrete instances, constitutes effective and proportional action. Such action should, among other things, be (1) timely; (2) tailored to the circumstances of the case; and (3) regularly reviewed and maintained as long as necessary to prevent the harm involved, but not longer. Several measures are typically associated with the implementation of the precautionary principle. These include research, environmental impact assessment (EIA), safety margins, allotment of the burden of proof to proponents of potentially harmful activities, and – the most obviously precautionary measure – the moratorium. All the same, any other measure may constitute an appropriate implementation of the principle provided that it complies with the prerequisites of effectiveness and proportionality.

3 Preventative logic and the preventative principle

Preventative *logic*, which may be captured in the common-sense adagio that prevention is better than cure, has been a pervasive feature of environmental law and policy for quite some time, and has formed the foundation of many

²¹ *Id.*, at 159.

international and national legal and policy instruments aimed at environmental protection. As a basis for everyday decisions in many walks of life, however, preventative logic is obviously not limited to environmental matters.

The preventative *principle*, however, is a predominantly environmental concept.²² An understanding of this principle – synonyms of which include ‘preventative principle’, ‘prevention principle’, ‘principle of prevent(at)ive action’, and ‘prevent(at)ive approach’ – can be obtained partly by describing what it is *not*. Specifically, the preventative principle should be told apart from the duty of States to avoid transboundary environmental harm.²³ The latter constitutes a traditional and fundamental tenet of international environmental law and was enshrined in the 1972 Stockholm Declaration as the obligation of States ‘to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction’.²⁴ It was reiterated in the Rio Declaration²⁵ and is almost universally believed to form part of customary international law.²⁶ Because in many situations this duty

²² Generally, see inter alia de Sadeleer, above n. 3; and P. Sands, *Principles of International Environmental Law* (Cambridge: Cambridge University Press 2003, 2nd ed.) at 246.

²³ On the distinction between the duty not to cause transboundary damage and the preventative principle, see Sands, *id.* at 246; G. Handl, ‘Environmental Security and Global Change: The Challenge to International Law’ in W. Lang and others (eds.), *Environmental Protection and International Law* (London, Dordrecht, Boston: Graham & Trotman 1991) 59 at 75; L. Guruswamy and B. Hendricks, *International Environmental Law* (St. Paul: West Publishing Co. 1997) at 29; L. Paradell-Trius, ‘Principles of International Environmental Law: An Overview’ (2000) 9 *Review of European Community and International Environmental Law* 93 at 97; F. Orrego Vicuña, *The Changing International Law of High Seas Fisheries* (Cambridge: Cambridge University Press 1999) at 153; J. Juste Ruiz, *Derecho Internacional del Medio Ambiente* (Madrid: McGraw-Hill 1999) at 71; A.C.H. Kiss and D. Shelton, *International Environmental Law* (New York: Transnational Publishers 2000, 2nd ed.) at 263; and F. Mucklow, ‘The Integration of Environmental Principles into the World Bank’ (2000) 9 *Review of European Community and International Environmental Law* 100 at 107.

²⁴ Declaration of the UN Conference on the Human Environment, 16 June 1972, UN Doc. A/CONF/48/14/Rev.1, Principle 21.

²⁵ Rio Declaration, above n. 6, Principle 2.

²⁶ See for example P. Birnie and A. Boyle, *International Law and the Environment* (Oxford: Oxford University Press 2002, 2nd ed.) at 109; Sands, above n. 22, at 241; R. Lefeber, *Transboundary Environmental Interference and the Origin of State Responsibility* (London, Dordrecht, Boston: Graham & Trotman 1996) at 19; Guruswamy and Hendricks, above n. 23, at 29; Kiss and Shelton, above n. 23, at 42; Paradell-Trius, above n. 23, at 97. According to the ICJ in its 1996 Advisory Opinion on the *Legality of the Threat or Use of Nuclear Weapons*, the duty not to

calls for the adoption of preventative measures, some have in fact, for present purposes unhelpfully, referred to it as the 'preventive principle'.²⁷

Although both the duty to avoid transboundary harm and the preventative principle as it is generally understood mandate the adoption of preventative measures, the fundamental distinction between them lies in their respective objectives. Whereas the former derives from respect for the principle of state sovereignty, the latter – like the precautionary principle – seeks to protect the environment as an end in itself.²⁸ Accordingly, the scope of the preventative principle – again like the precautionary principle – is not confined to transboundary damage.²⁹ Its conceptual core: namely, preventative *logic*, can be traced back at least some eighty years and can, as stated above, be viewed as being at the basis of many environmental agreements and of concrete measures aimed at, for instance, the minimisation of pollution.³⁰ However, as a *principle* it has not been codified nearly as frequently as the duty to avoid transboundary harm, and the scant codifications in question are largely confined to European instruments.³¹ Consequently, not all writers necessarily recognise the existence per se of the preventative principle as understood here,³² and of those who do, very few claim that it has attained the status of customary international law.³³ Indeed, a number of authors do attribute customary status to the duty to avoid transboundary harm but not to the preventative principle.³⁴ In 1991,

cause transboundary harm 'is now part of the corpus of international law relating to the environment.' ICJ Reports (1996) at 241.

²⁷ D. Freestone and Z. Makuch, 'The New International Environmental Law of Fisheries: The 1995 UN Straddling Stocks Convention' (1996) 7 *Yearbook of International Environmental Law* 3 at 13; D. Freestone, 'International Fisheries Law Since Rio: The Continued Rise of the Precautionary Principle' in A. Boyle and D. Freestone (eds.) *International Law and Sustainable Development* (Oxford: Oxford University Press 1999) 135 at 139.

²⁸ Sands, above n. 24, at 246; Orrego Vicuña, above n. 23, at 153; Kiss and Shelton, above n. 23, at 264.

²⁹ Sands, *id.*

³⁰ Kiss and Shelton, above n. 23, at 263.

³¹ See for example below n. 63.

³² For example Lefeber, above n. 26, discusses the obligation of prevention and abatement of transboundary harm (at 19) and the precautionary principle (at 33 and 91), but not the preventative principle. The same goes for Birnie and Boyle, above n. 26, dealing with the duty to avoid transboundary harm (at 109) and the precautionary principle (at 115), but not with a separate preventative principle.

³³ Sands, above n. 22, at 249 appears to allude to the possibility, but does not state it in so many words, that the principle has customary law status.

³⁴ Writers expressly denying the latter principle the capacity of international custom include Handl, above n. 23, at 75; and Guruswamy and Hendricks, above n. 23, at 29. Others, such as Paradell-Trius, above n. 23, at 97, while affirming that the duty

one author, while observing that the ‘self-evident truth that an ounce of prevention is better than a pound of cure, has for some time now been reflected in the international law related to the environment,’ acknowledged that ‘unto this day the notion has persisted that customary international law does not yet include such an obligation’.³⁵ Interestingly, the 2005 arbitral award in the *Iron Rhine* case appears to come close to according customary status to the preventative principle when stating that:

Environmental law and the law on development stand not as alternatives but as mutually reinforcing, integral concepts, which require that where development may cause significant harm to the environment there is a duty to prevent, or at least mitigate, such harm (see paragraph 222). This duty, in the opinion of the Tribunal, has now become a principle of general international law.³⁶

Nevertheless, the 222nd recital of the award referred to here makes clear that what is meant is, after all, the traditional duty to prevent *transboundary* harm.

It would seem that to date the preventative principle still does not provide a broad customary obligation to prevent environmental harm in areas beyond *and* within national jurisdiction. The *precautionary* principle, however, does exactly that.

4 Precautionary logic and the precautionary principle

In parallel to the considerations in the previous section, precautionary *logic* – which roughly corresponds to erring on the safe side – is an habitual feature of human life that is evidently not confined to environmental affairs.³⁷ Notably, the application of precautionary logic to security issues, including dealing with terrorism, has been receiving increased attention in recent years.³⁸ Such logic had been apparent in the security policy of the George W. Bush administration since 11 September 2001. As then Vice President Dick Cheney instructed the

to avoid transboundary harm is a customary principle, choose not to comment on the legal status of the preventative principle.

³⁵ Handl, above n. 23, at 75.

³⁶ *Iron Rhine Arbitration (Belgium v. Netherlands)*, 24 May 2005, Permanent Court of Arbitration Award Series (2005), <www.pca-cpa.org>, para. 59.

³⁷ See for example R. Pieterman, *De Voorzorgcultuur: streven naar veiligheid in een wereld vol risico en onzekerheid* (The Hague: Boom Juridische Uitgevers 2008).

³⁸ See for example C. Aradau and R. van Munster, ‘Governing Terrorism Through Risk: Taking Precautionas, (un)Knowing the Future’ (2007) 13 *European Journal of International Relations* 89; A. Goldsmith, ‘The Governance of Terror: Precautionary Logic and Counterterrorist Law Reform After September 11’ (2008) 30 *Law and Policy* 141; M. de Goede, ‘The Politics of Preemption and the War on Terror in Europe’ (2008) 14 *European Journal of International Relations* 161.

CIA in November 2001: ‘Even if there’s only a one percent chance of the unimaginable becoming true, act as though it’s a certainty’.³⁹ Similarly, before actually carrying it out, President Bush repeatedly reserved the option of an anticipatory military strike against the Iraq of Saddam Hussein in the absence of conclusive evidence of weapons of mass destruction, in classic precautionary wording such as this:

Understanding the threats of our time, knowing the designs and deceptions of the Iraqi regime, we have every reason to assume the worst, and we have an urgent duty to prevent the worst from occurring. ... There is no easy or risk-free course of action. Some have argued we should wait – and that is an option. In my view, it is the riskiest of all options – because the longer we wait, the stronger and bolder Saddam Hussein will become. ... [W]e cannot wait for the final proof – the smoking gun – that could come in the form of a mushroom cloud.⁴⁰

All the same, the US and other states are *not* in the habit of expressly invoking the precautionary *principle* in these matters. The latter has, from the outset, been a distinctly *environmental* principle and the limits of its scope in contemporary general international law reflect this. In respect of human health protection, the situation is slightly less clear-cut than in the security area.⁴¹ Health is encompassed within the scope of the customary precautionary principle only partly and indirectly: namely, to the extent that human health benefits from *environmental* protection. Typical health issues like food safety fall outside this scope. The Rio Declaration, in which States endorsed the principle in order to ‘protect the *environment*’ through measures preventing ‘*environmental* degradation’, is highly representative in this respect.⁴² Legal instruments expressly linking the precautionary principle to human health as well as the environment exist, but are so few and far between that they must be regarded the exceptions confirming the general rule just set out.⁴³ Moreover, the provisions in question in these instruments focus on shielding human health from negative effects of *environmental* pollution: put differently, also in those provisions the precautionary principle has little to do with, for instance, the possible health hazards of vitamin additives.

In contending that the precautionary principle covers not only the

³⁹ See R. Suskind, *The One Percent Doctrine* (New York: Simon and Schuster 2006).

⁴⁰ Televised speech broadcast 7 October 2002, transcript available at <<http://www.cnn.com>>.

⁴¹ For a slightly more elaborate discussion than the one below, see Trouwborst (2007b), above n. 2, at 189.

⁴² Rio Declaration, above n. 7, Principle 15 (emphasis added).

⁴³ See for example Protocol to the Convention on Biological Diversity on Biosafety, 29 January 2000, Art. 1, 10(6) and 11(8); Convention on Persistent Organic Pollutants, 22 May 2001, Art. 1.

environment but also human, animal, and plant health in their own right, the EU has been fighting a lonely battle in the global arena.⁴⁴ Significantly, an EU proposal to explicitly include human health within the ambit of the principle ran aground at the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg, and there is little to suggest that things have changed since then. Some of the largest international controversies involving the precautionary principle, to be sure, have precisely concerned distinctive health issues: for instance, the trans-Atlantic beef hormones dispute in the World Trade Organization (WTO) in the mid-1990s. Whilst reasoning that the precautionary principle ‘finds reflection’ in some of the provisions of the SPS Agreement,⁴⁵ the WTO Appellate Body settling the dispute was unwilling to accord the precautionary principle much legal significance outside the environmental domain, while more generously reserving the possibility of the principle having attained the status of ‘customary international *environmental* law’.⁴⁶ This approach was copied by the WTO Panel in the more recent *Biotech* case.⁴⁷ Besides, academic critics of the precautionary principle seldom target its application to nature conservation or to environmental pollution, while wholeheartedly condemning its application in Europe to health issues proper like antibiotics in animal feed, BSE, and pharmaceuticals.⁴⁸

Once more, the key to understanding this state of affairs is the distinction between precautionary *logic* and the precautionary *principle*. In conformity with the priorities of States and their citizens, precautionary logic has formed part of health law and policy for a long time.⁴⁹ No *principle* was

⁴⁴ See, e.g., the European Commission Communication of 2 February 2000 on the Precautionary Principle, COM (2000) 1, at 8, or a random selection from the germane jurisprudence of the EU Court of Justice.

⁴⁵ WTO Agreement on the Application of Sanitary and Phytosanitary Measures, 15 April 1994, Preamble and Art. 3.3 and 5.7.

⁴⁶ *EC Measures Concerning Meat and Meat Products*, WTO AB 16 January 1998, WT/DS26/AB/R, WT/DS48/AB/R, para. 123 (emphasis in original). The Appellate Body also submitted that ‘the precautionary principle, *at least outside the field of international environmental law*, still awaits authoritative formulation’ (*id.*, emphasis added).

⁴⁷ *EC Measures Affecting the Approval and Marketing of Biotech Products*, WTO 29 September 2006, WT/DS291/R, WT/DS292/R, WT/DS291/R. After reproducing the paras. from *Beef Hormones* just cited, the Panel observes in para. 7.88 of its report that provisions applying the precautionary principle ‘have been incorporated into numerous international conventions and declarations, although, for the most part, they are *environmental* conventions and declarations. Also, the principle has been referred to and applied by States at the domestic level, again mostly in domestic *environmental law*’ (footnotes omitted; emphasis added).

⁴⁸ See for example Marchant and Mossman, above n. 1.

⁴⁹ As noted by the WTO Appellate Body in *Beef Hormones*, above n. 46, para. 124: ‘responsible, representative governments commonly act from perspectives of prudence and precaution where risks of irreversible, e.g. life-terminating, damage to

needed to ensure this. Things are different in the environmental field, where precaution has, at least until recently, been lacking enormously. With respect to the environment, the need for, and added value of, an express legal principle to force a change for the better was substantial. In any case, even in the EC Treaty the precautionary principle is absent from provisions dealing with human health and consumer protection,⁵⁰ and can be found only in the environment section.⁵¹ The precautionary principle was simply never meant to deal with the alleged health hazards of high voltage cables and comparable risks with infinitesimal probabilities. The present application of an explicit precautionary *principle*, primarily by and within the EU, in an area, human health, where precaution has long been the rule as it is, has led to unease and agitation on the part of trade partners and to perceptible confusion on the part of EU institutions themselves. One way or the other, in general international law as it stands the scope of the precautionary principle is restricted to environmental protection. Ignoring this means entering murky waters – and plenty of work for courts.⁵²

5 Preventative logic and precautionary logic

In theory, a comparatively unambiguous dividing line may be drawn between preventative logic and precautionary logic, using uncertainty as the defining criterion. If the environmental effects of a particular activity are known, measures to avoid them may be termed preventative. If such effects are uncertain, the same measures may also be labelled precautionary.⁵³ As knowledge of an issue (e.g. ozone layer depletion or climate change)

human health are concerned'. Of course, it has been argued in individual cases that the application of precautionary logic to human health protection has not gone quite far enough. See for example P. van Zwanenberg and E. Millstone, "'Mad Cow Disease' 1980s-2000: How Reassurance Undermined Precaution' in Harremoes and others, above n. 3, at 157.

⁵⁰ Treaty Establishing the European Community, 25 March 1957, 298 UNTS 11, Art. 152-153.

⁵¹ *Id.*, Art. 174(2) (introduced by the Treaty on European Union amendments, 7 February 1992, 31 ILM (1992) 247.

⁵² The EU Court of Justice (e.g. *Pfizer Animal Health v. Council*, 30 June 1999, T-13/99) and several WTO panels bear witness to this, as do the Australian judges who in a decade had to decide more than 25 cases on the precautionary principle in relation to mobile phone towers. On the latter, see J. Peel, 'When (Scientific) Rationality Rules: (Mis)Application of the Precautionary Principle in Australian Mobile Phone Tower Cases' (2007) 19 *Journal of Environmental Law* 103.

⁵³ See for example J. Cameron and J. Abouchar, 'The Status of the Precautionary Principle in International Law' in D. Freestone and E. Hey (eds.), *The Precautionary Principle and International Law* (The Hague: Kluwer Law International 1996) 29 at 45; De Sadeleer, above n. 22, at 222.

advances, related measures automatically become less precautionary and more preventative.⁵⁴ Ultimately, once all uncertainty has been removed, 'precaution is no longer the right word'.⁵⁵ Under strictly preventative logic, the taking of preventative action is conditional upon the existence of 'certainty' regarding the threats involved. Conversely, precautionary logic means acting as soon as alarm bells are ringing, even if 'certainty' is not yet available.⁵⁶ In time, precautionary logic thus typically calls for measures at an earlier stage than does purely preventative logic. Precautionary logic goes further than preventative logic, and clearly presupposes the latter. Whichever way, in principle, where there is certainty, preventative logic suffices and vice versa.⁵⁷

Matters become slightly more complex when one adheres to the relatively common position that preventative logic covers the prevention of known risks of harm. Risk is generally construed as a function of the probability of occurrence of a certain hazard in a given period and the expected gravity of resultant harm should it occur.⁵⁸ On the aforementioned view of the matter, minimisation of quantifiable risks could still be seen as preventative. It would thus be the presence or absence of scientifically established and well-understood causal relationships that defines the distinction between preventative and precautionary logic. After all, without proof and understanding of such relationships, risks cannot validly be calculated.⁵⁹ As De Sadeleer explains:

Prevention is based on certainties: it rests on cumulative experience concerning the degree of risk posed by an activity (Russian roulette, for example, involves a

⁵⁴ J. Cameron, 'The Status of the Precautionary Principle in International Law' in T. O'Riordan and J. Cameron (eds.), *Interpreting the Precautionary Principle* (London: Cameron & May 1994) 263 at 275; W. Gullett, 'Environmental Protection and the Precautionary Principle: A Response to Scientific Uncertainty in Environmental Management' (1997) 14 *Environmental and Planning Law Journal* 52 at 60.

⁵⁵ N. Haigh, 'The Introduction of the Precautionary Principle into the UK' in T. O'Riordan and J. Cameron (eds.), *Interpreting the Precautionary Principle* (London: Cameron & May 1994) 229 at 241.

⁵⁶ Freestone and Makuch, above n. 27, at 13; D.M. Dzidzornu, 'Four Principles in Marine Environment Protection: A Comparative Analysis' (1998) 29 *Ocean Development and International Law* 91 at 100; Freestone, above n. 27, at 139; also Juste Ruiz, above n. 23, at 78.

⁵⁷ M. Kaiser, 'Fish-Farming and the Precautionary Principle: Context and Values in Environmental Science for Policy' (1997) 2 *Foundations of Science* 307 at 312; N. Haigh, above n. 55, at 241.

⁵⁸ For a discussion and further sources, see Trouwborst (2006), above n. 2, at 26.

⁵⁹ See for example Lefeber, above n. 26 at 91; J. Cameron, W. Wade-Gery and J. Abouchar, 'Precautionary Principle and Future Generations' in E. Agius and others (eds.), *Future Generations and International Law* (London: Earthscan 1998) 93 at 101.

predictable one-in-six chance of death). Therefore, prevention presupposes science, technical control, and the notion of an objective assessment of risks in order to reduce the probability of their occurrence. Preventive measures are thus intended to avert risks for which the cause-and-effect relationship is already known. ... Precaution, in contrast, comes into play when the probability of a suspected risk cannot be irrefutably demonstrated. The distinction between the two ... is thus the degree of uncertainty surrounding the probability of risk. The lower the margin of uncertainty, the greater the justification for intervention as a means of prevention rather than in the name of precaution. By contrast, precaution is used when scientific research has not yet reached a stage that allows the veil of uncertainty to be lifted.⁶⁰

From a practical perspective, however, a rigid segregation of the two concepts is hardly operable. One may consider, for instance, the ‘apparently unsteady distinction’ between risk and uncertainty.⁶¹ Notwithstanding terminology such as ‘known risks’ and the like, uncertainty is obviously inherent in the very notion of risk. Also quantifiable risks, where the likelihood and nature of an anticipated impact are relatively ‘established’, still embody a degree of uncertainty.⁶² Furthermore, any given calculation, however correctly executed, may be overlooking or misinterpreting environmental relationships and effects that may not yet exist or are wrongly understood. In this sense, action taken to combat *risks* can be named precautionary as much as preventative.⁶³ The precautionary *extent* of any such action, for instance addressing contamination of a river as a result of an industrial accident, depends on the relative importance of the uncertainties in question:

If both the probability of accidental pollution and the magnitude of the consequences of that pollution are known, the standards would be relatively unprecautionary, precisely because the level of uncertainty involved is relatively low. High risks do not necessarily entail high levels of uncertainty. However, if the probability and magnitude are relatively unknown, because, for instance, it is not known what cause and effect relationships are involved, or exactly what the nature of the involved causal relationships is, then the standards would be precautionary because of the relative uncertainties involved.⁶⁴

It may thus be argued that in the end all *risk* reduction measures are precautionary to some degree, although some more than others.⁶⁵

⁶⁰ De Sadeleer, above n. 22, at 74-75.

⁶¹ Cameron, Wade-Gery and Abouchar, above n. 59, at 101.

⁶² By definition, probability is not the same as certainty.

⁶³ Cameron, Wade-Gery and Abouchar, above n. 59, at 101.

⁶⁴ *Id.*

⁶⁵ H. Hohmann, *Precautionary Legal Duties and Principles of Modern International Environmental Law* (Dordrecht: Kluwer Law International 1994) at 334.

6 The preventative principle and the precautionary principle

At the outset of this section it is worthwhile to recall that the preventative principle and the precautionary principle have identical purposes: namely, the adequate protection of the environment. Still, they have regularly been treated as separate principles, including in the EC Treaty and a number of other (predominantly European) international legal and policy instruments that name both principles alongside each other.⁶⁶ But how are they different and, more importantly, how do they relate to each other?

Following the elegant and, theoretically speaking, apparently sound distinction between preventative and precautionary logic as described in the previous section, commentators have frequently distinguished the preventative principle and the precautionary *principle* along the same lines.⁶⁷ In this regard, the preventative principle – like the duty to avoid transboundary harm – is often understood to comprise the avoidance of known harm as well as known risks of harm.⁶⁸ Yet, this distinction has not translated accurately into inter-governmental practice. As will be clear by now, preventative and precautionary *logic* do not neatly overlap with, respectively, the preventative and precautionary *principles*. Likewise, the difference between preventative logic and precautionary logic does not exactly match the difference between the preventative principle and the precautionary principle. And even if it did, it would obviously still be difficult for States to decide when to rely on the preventative and when on the precautionary principle, considering the practical difficulty of distinguishing between preventative and precautionary action discussed above.⁶⁹ As Haigh put it: ‘Since there is likely to be uncertainty when

⁶⁶ EC Treaty, above n. 50, Art. 174(2); Convention on the Protection of the Meuse and Convention on the Protection of the Scheldt, 26 April 1994, 34 ILM 1995 at 851, Art. 3(2) of both; Pan-European Biological and Landscape Diversity Strategy, 25 October 1995, <www.nature.coe.int>, Section 2.4, paras. 2 and 3; Protocol (to 1960 Treaty Between the Netherlands and Germany on Cooperation in the Ems River Mouth) on Cooperation in the Area of Water and Nature Protection in the Ems River Mouth, 22 August 1996, Art. 1(2); Trilateral Wadden Sea Plan, 22 October 1997, para. 8; Convention on the Protection of the Rhine, 12 April 1999, Art. 4; Protocol (to 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes) on Water and Health, 17 June 1999, ECOSOC Doc. MP.WAT-AC.1-1999-1, Art. 5. For example, the latter provision refers separately to the precautionary principle [para. (a)], the duty to avoid transboundary harm [para. (c)] and the preventative principle [para. (e)].

⁶⁷ For example De Sadeleer, above n. 3, *id.*

⁶⁸ Lefeber, above n. 26, at 29; Freestone and Makuch, above n. 27 at 13; Cameron and Abouchar, above n. 53, at 45; Cameron, Wade-Gery and Abouchar, above n. 59, at 101; Freestone, above n. 27, at 139.

⁶⁹ Ch.W. Backes and others, *Milieurecht* (Deventer: Kluwer 2006, 6th ed.) at 36; Ch.W. Backes and others, ‘Onderzoeksrapport: Het Voorzorgsbeginsel in het

uncertainty disappears there will also be uncertainty about whether to talk of the principle of precaution rather than of prevention'.⁷⁰

Not surprisingly, in national and international discourse, States have not always distinguished sharply between the preventative and precautionary principles.⁷¹ A 1988 UK policy document, for example, speaks of 'a preventive, precautionary approach'.⁷² The 1991 Bamako Convention, apart from mentioning 'the precautionary principle', makes reference to 'the preventive, precautionary approach',⁷³ whereas the parties to the 1992 EEA Agreement dedicated themselves to preserving the environment on the basis of 'the principle that precautionary and preventive action should be taken'.⁷⁴ Likewise, the 1992 Central American Hazardous Wastes Agreement refers to 'el enfoque preventivo y precautorio'.⁷⁵ A similar lack of distinction can be encountered, *inter alia*, in various provisions of Agenda 21⁷⁶ and the 1996 Protocol to the London Convention on marine dumping.⁷⁷ Prevention and precaution seem to be presented in these instruments as two sides of the same coin, with a blurred dividing line between them at best.⁷⁸

However, a question – the answer to which is evidently crucial for present purposes – is whether uncertainty is actually a precondition for the applicability of the precautionary principle. This is tightly related to the question of whether the precautionary principle warrants action *because* of uncertainty or *in spite* of uncertainty.

The answer is that the practice of States and common sense alike clearly favour the latter option. Certainly, as described earlier, the role of

Natuurbeschermingsrecht' in Ch.W. Backes and others (eds.), *Het Voorzorgbeginsel in het Natuurbeschermingsrecht* (Deventer: Kluwer 1997) 49 at 56; Hohmann, above n. 65, at 334.

⁷⁰ Haigh, above n. 55, at 241.

⁷¹ K.R. Gray, 'International Environmental Impact Assessment' (2000) 11 *Colorado Journal of International Environmental Law and Policy* 83 at 99.

⁷² Department of the Environment, *Protecting Your Environment: A Guide* (July 1988), cited in Haigh, above n. 56, at 247.

⁷³ Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, 29 January 1991, 30 ILM 1991 at 775; both references in Art. 3(f).

⁷⁴ Agreement on the European Economic Area, 20 May 1992, OJ 1994 L1 at 3, preamble, 6th para.

⁷⁵ Regional Agreement on the Transboundary Movement of Hazardous Wastes, 11 December 1992, <www.basel.int>, Art. 3(3).

⁷⁶ Agenda 21, 14 June 1992, UN Doc. A/CONF.151/26/Rev.1, paras. 17.5, 17.21, 17.22, 19.60.

⁷⁷ Protocol (to 1972 Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter), 7 November 1996, (1996) 7 *Yearbook of International Environmental Law* at 644, preamble, 2nd para.

⁷⁸ Backes and others, above n. 69 at 56; also Cameron, Wade-Gery and Abouchar, above n. 59, at 101.

uncertainty in environmental affairs forms an important part of the rationale of the precautionary principle.⁷⁹ Even so, as the word ‘including’ in the definition presented above indicates, it is *not* correct to say that the presence of uncertainty is a requirement for application of the principle.⁸⁰ On the contrary, the criterion of proportionality requires that the strictness of precautionary measures correspond to the likelihood and expected gravity of harm. Thus, when there is certainty – assuming such a thing exists – that harm will occur if preventative measures are not taken, then this is all the more reason to take action. If the thresholds of harm and likelihood are crossed, effective and proportional must be taken, whether there is uncertainty or not. Strictly speaking, the last part of the definition just referred to, running from ‘including’ through ‘harm’, can be left out without changing the content of the principle. It is a clarification, not a condition. The right question is therefore not how much uncertainty *must* there be for the precautionary principle to apply, but how much uncertainty *may* there be. The latter question may be answered by reference to the minimum threshold of likelihood: ‘reasonable grounds for concern’. It is thus possible to imagine cases where there is too much uncertainty for the principle to apply. Conversely, there can never be too much *certainty* of harmfulness for the principle to be applicable.

Principle 15 of the Rio Declaration, and the many other provisions of international and national instruments that are either similarly phrased or directly refer to Principle 15, postulate that where environmental harm is threatened, ‘lack of full scientific certainty shall not be used as a reason for postponing’ preventative measures.⁸¹ That is, action to ward off potential hazards may not be impeded by uncertainty. Where the use of scientific uncertainty as an excuse for postponing measures to prevent environmental degradation is forbidden, the suitability of such measures *an sich* must be considered a given.⁸² Put yet another way, the trigger for any measures that may be required by the precautionary principle is obviously the concern that damage may be caused, and not the scientific uncertainty itself. Hence, according to these provisions, the precautionary principle demands action *in spite* of uncertainty, not because of it.

Other instruments state this premise more explicitly. For instance, in the 1992 Baltic Sea Convention the precautionary principle has been specified to require preventative action when there is reason to assume that emissions of substances or energy into the marine environment may be harmful, ‘*even when* there is no conclusive evidence of a causal relationship between inputs and

⁷⁹ See above Section 2.

⁸⁰ See text accompanying n. 21.

⁸¹ For a selection of such provisions and a discussion of Principle 15’s significance, see Trouwborst (2006), above n. 2, at 32.

⁸² Also A. Soria Jiménez, ‘Ecological Catastrophes in Light of the Rio Agreements’ (1996) 39 *German Yearbook of International Law* 388 at 407.

their alleged effects'.⁸³ This is a clear case of action despite uncertainty. Likewise, the 2002 ASEAN Haze Pollution Agreement stipulates that 'where there are threats of serious or irreversible damage from transboundary haze pollution, *even without full scientific certainty*, precautionary measures shall be taken by Parties concerned'.⁸⁴ The 1992 OSPAR Convention,⁸⁵ the 1996 London Protocol,⁸⁶ the 1997 Trilateral Wadden Sea Plan,⁸⁷ the European Commission's 2000 Communication on the principle,⁸⁸ and several inter-governmental declarations on the protection of the oceans contain like formulations.⁸⁹ Instances of such formulations at the national level include a 1984 judgment of the German Federal Administrative Court,⁹⁰ the 1996 report of the US President's Council on Sustainable Development,⁹¹ a Belgian federal act of 1999 on the protection of the marine environment,⁹² and several UK policy instruments.⁹³ The environmental law of Mozambique is particularly categorical, stating that the precautionary principle calls for the avoidance of significant or irreversible adverse environmental impacts '*independently* of the

⁸³ Convention on the Protection of the Marine Environment of the Baltic Sea Area, 9 April 1992, 3 *Yearbook of International Environmental Law* (1992) 1, Art. 3(2) (emphasis added).

⁸⁴ ASEAN (Association of South East Asian Nations) Agreement on Transboundary Haze Pollution, 10 June 2002, <www.aseansec.org>, Art. 3(3) (emphasis added).

⁸⁵ Convention for the Protection of the Marine Environment of the North-East Atlantic, 22 September 1992, 8 *International Journal of Marine and Coastal Law* (1993) 50, Art. 2(2)(a).

⁸⁶ Above n. 77, Art. 3(1).

⁸⁷ Above n. 66, para. 8.

⁸⁸ Above n. 44, at 13.

⁸⁹ Second North Sea Declaration, above n. 7, para. XVI(1); Declaration of the Third International Conference on the Protection of the North Sea, 8 March 1990, preamble; Declaration of the Nordic Council International Conference on Pollution of the Seas, 18 October 1989; Ministerial Declaration of the Sixth Trilateral Governmental Conference on the Protection of the North Sea, 13 November 1991, para. 3.

⁹⁰ *Bundesverwaltungsgericht*, 14 February 1984, 69 *BverGE* (1985) at 43; see N. de Sadeleer, 'The Enforcement of the Precautionary Principle by German, French and Belgian Courts' (2000) 9 *Review of European Community and International Environmental Law* 144 at 145.

⁹¹ President's Council on Sustainable Development, *Sustainable America: A New Consensus for Prosperity, Opportunity and a Healthy Environment*, February 1996.

⁹² *Wet ter Bescherming van het Mariene Milieu in de Zeegebieden onder de Rechtsbevoegdheid van België*, Act of 20 January 1999, *MB* 12 March 1999, Art. 4(3).

⁹³ White Paper 'This Common Inheritance' (1990); Guidelines for Environmental Risk Assessment and Management, 2000.

existence of scientific certainty about the occurrence of such impacts'.⁹⁴ The 2004 International Law Association (ILA) Berlin Rules on Water Resources⁹⁵ as well as many individual scholars take a comparable approach.⁹⁶

On all these occasions, the precautionary principle apparently embodies the assumption that preventative and abatement action is *always* appropriate where there is a sufficiently qualified threat of environmental harm. The principle accompanies this by the explicit elucidation that this is so *even when* scientific proof in relation to this threat and its potential effects is lacking. The definition of the precautionary principle in the 1990 Bergen Declaration points in the same direction:

In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.⁹⁷

The full-stop at the end of the second sentence says it all. Environmental degradation must be prevented. That scientific uncertainty may not hamper this prevention is a separate addition. Yet another variation on the same theme is provided by formulations in the vein of the 2002 ILA New Delhi Declaration on Sustainable Development, which specifies that the precautionary principle commits States 'to avoid human activity which may cause significant harm to human health, natural resources or ecosystems, *including* in the face of

⁹⁴ Lei no. 20/97, 1997, reproduced at <faolex.fao.org/docs/texts/moz15370.doc>, Art. 4(3); author's translation of the original Portuguese text, which speaks of 'evitar a ocorrência de impactos ambientais negativos significativos ou irreversíveis, *independentemente* da existência de certeza científica sobre a ocorrência de tais impactos' (emphasis added).

⁹⁵ 21 August 2004, Art. 23(2).

⁹⁶ E.g., J. Ebbesson, *Compatibility of International and National Environmental Law* (London, The Hague, Boston: Kluwer Law International 1996) at 119; P.H. Martin, "'If You Don't Know How to Fix it, Please Stop Breaking it!': The Precautionary Principle and Climate Change' (1997) 2 *Foundations of Science* 263 at 276; J. Lemons and others, 'The Precautionary Principle: Scientific Uncertainty and Type I and Type II Errors' (1997) 2 *Foundations of Science* 207 at 210; Dzidzornu, above n. 57 at 98; Freestone, above n. 27 at 137; H.C. Borgers, 'In Dubio Pro Natura: Het Functionele Perspectief van het Voorzorgsbeginsel' (1999) 48 *Ars Aequi* 431 at 435; F.X. Perrez, *Cooperative Sovereignty: From Independence to Interdependence in the Structure of International Environmental Law* (The Hague, London, Boston: Kluwer Law International 2000) at 289; M. Tallacchini, 'A Legal Framework from Ecology' (2000) 9 *Biodiversity and Conservation* 1085 at 1096.

⁹⁷ Ministerial Declaration on Sustainable Development in the ECE Region, 16 May 1990, UN Doc. A/CONF.151/PC10, Annex I, para. 7.

scientific uncertainty'.⁹⁸

Now that *preventative* action proper is evidently viewed as within the bounds of the precautionary principle just as much as *precautionary* action proper, where does this leave the preventative principle? Just as precautionary logic presupposes preventative logic – in the sense that not only uncertain hazards but of course also 'certain' hazards are to be dealt with – so the precautionary principle may perhaps be considered as presupposing, as it were, the preventative principle. That is, the latter might be deemed 'a necessary corollary to the former'.⁹⁹ It seems to do more justice to the pertinent practice of States, however, to view the precautionary principle as an expanded version of the preventative principle,¹⁰⁰ as effectively comprising the latter, or – probably most accurately – as the 'most developed form' of prevention.¹⁰¹

Indeed, States do not focus on demarcating the respective scopes of application of the preventative and precautionary principles and, for that matter, rarely cite the preventative principle at all, as mentioned above.¹⁰² Instead, they tend to rely on the precautionary principle as the flag that covers the entire cargo of preventative measures, whether taken under scientific uncertainty or not. For example, a 1989 Decision by the UN Environment Programme (UNEP) Governing Council Decision urged the international community to adopt the precautionary principle as *the* basis (not just one of the bases) of its policy on marine pollution.¹⁰³ Correspondingly, the 1995 Fourth North Sea Declaration states:

The Ministers AGREE that the objective is to ensure a sustainable, sound and healthy North Sea ecosystem. The guiding principle for achieving this objective is the *precautionary* principle. *This implies the prevention of the pollution of the North Sea* by continuously reducing discharges, emissions and losses of hazardous substances, thereby moving towards the target of their cessation within one generation (25 years) with the ultimate aim of concentrations in the environment

⁹⁸ Declaration of Principles of International Law Relating to Sustainable Development, 2 April 2002, para. 4.1 (emphasis added).

⁹⁹ Soria Jiménez, above n. 82, at 407.

¹⁰⁰ For example Soria Jiménez, *id.*; Martin, above n. 97, at 263; M. Matthee and D. Vermersch, 'Are the Precautionary Principle and the International Trade of Genetically Modified Organisms Reconcilable?' (2000) 12 *Journal of Agricultural and Environmental Ethics* 59 at 61; E. Louka, *International Environmental Law: Fairness, Effectiveness and World Order* (Cambridge: Cambridge University Press 2006) at 50.

¹⁰¹ A.C.H. Kiss, 'The Rights and Interests of Future Generations and the Precautionary Principle' in D. Freestone and E. Hey (eds.), *The Precautionary Principle and International Law* (The Hague: Kluwer Law International 1996) 19 at 27; similarly, Kiss and Shelton, above n. 24, at 265.

¹⁰² See above Section 3.

¹⁰³ UNEP Governing Council Decision 15/27 on the Precautionary Approach to Marine Pollution, Including Waste-dumping at Sea, 25 May 1989, 44 UNGAOR (1989), Supp. 25, 152, para. 1.

near background values for naturally occurring substances and close to zero concentrations for man-made synthetic substances.¹⁰⁴

In fact, scores of legal instruments prescribe the application of the precautionary principle while *not* separately mentioning the preventative principle – which can impossibly be interpreted to mean that uncertain dangers are to be prevented while ‘certain’ dangers may be allowed to materialise. The Rio Declaration, for instance, does not incorporate the preventative principle as an autonomous principle, feeding the supposition that it is indeed inherent or encompassed in Principle 15.¹⁰⁵ By way of an illustrative sample,¹⁰⁶ the same goes for the OSPAR Convention,¹⁰⁷ the 1993 EU Fifth Action Programme on the Environment,¹⁰⁸ the 2001 Albatross Agreement,¹⁰⁹ and the 2001 Stockholm POPs Convention.¹¹⁰

In addition to these multilateral instruments apparently using the precautionary principle as *pars pro toto* for all preventative action – whether taken under uncertainty or not – various examples can be drawn from the domestic arena. One such instance is provided by the measures imposed after a fire in a chemical depot in Drachten, the Netherlands.¹¹¹ Although the impacts of some of the released substances were unknown, those of several others certainly were. Still, instead of appealing to the precautionary *and* preventative principles to justify a prohibition on the use of grass growing in the surrounding area as cow feed, the competent Dutch minister referred solely to the former.¹¹² In Germany it is not unusual either to conceive of precaution as actually comprising prevention.¹¹³ As a final example, a judicial decision by the Indian Supreme Court also treats the concept of prevention as part and parcel of the precautionary principle, in a manner very similar to the approach of the aforementioned Bergen Declaration.¹¹⁴

¹⁰⁴ Declaration of the Fourth Ministerial Conference on the Protection of the North Sea, 9 June 1995, <www.dep.nl/md/html/conf/declaration/esbjerg.html>, para. 17 (emphasis added).

¹⁰⁵ Soria Jiménez, above n. 83, at 392 and 407.

¹⁰⁶ More examples can be found in Trouwborst (2002), above n. 2, at 41.

¹⁰⁷ Above n. 85.

¹⁰⁸ Fifth Action Programme on the Environment of the European Community, 1 February 1993, OJ 1993 C138, Chapter 2.

¹⁰⁹ Agreement on the Conservation of Albatrosses and Petrels, 2 February 2001, <www.acap.aq>.

¹¹⁰ Convention on Persistent Organic Pollutants, 23 May 2001.

¹¹¹ See C. Lambers, ‘Het Voorzorgsbeginsel: Vluchten Kan Niet Meer’ (2000) 27 *Tijdschrift voor Milieu en Recht* 176.

¹¹² *Id.*

¹¹³ De Sadeleer, above n. 90, at 144.

¹¹⁴ *Vellore Citizens*, above n. 18.

In summary, the plain answer to the questions posed at the outset of this section is that where the precautionary principle is endorsed, the substance of the preventative principle is as well.

7 Conclusion

Rather than summarising all findings, this article ends with some selected remarks with a practical focus.

Firstly, to all intents and purposes, in the international law of the environment the precautionary principle must be regarded as having absorbed the preventative principle – or, alternatively, as being its most developed form. One way or the other, the result is the same. With the legal consolidation of the precautionary principle, there is no longer any reason to maintain a separate preventative principle aimed at the prevention of ‘certain’ harm – a principle that has never led an impressive autonomous existence in international law in any case. As described above, many modern environmental treaties exhibit this new status quo by mentioning, of the two, solely the precautionary principle, whereas it is evidently not the parties’ intention to combat uncertain threats while leaving ‘certain’ threats alone. Nevertheless, especially in the EU and its member States, the historically grown attachment to a theoretical distinction between prevention and precaution is presently still influential. This is unlikely to change drastically as long as the provision of the EC Treaty, in which the two principles are cited separately, survives in its current form.¹¹⁵ When the occasion presents itself, however, it would probably serve the interest of clarity to fall in with general international law by adopting the precautionary principle as the sufficient and sole basis for the prevention of ‘certain’ and uncertain environmental harm alike, and bidding the preventative principle farewell.

Secondly, it seems fitting to emphasise the importance of the distinction between precautionary logic and the precautionary principle at this point. Whereas from various perspectives it is interesting and worthwhile to study the role of precautionary *logic* in fields outside the environmental domain, the above analysis warrants the conclusion that it would be inappropriate and unnecessarily confusing to refer in these areas to the precautionary *principle*.

Having started with a thought-provoking quote, this article ends with a modern classic that is not only suitable in light of the above but also poetic:

¹¹⁵ EC Treaty, above n. 50, Art. 174(2).

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As we know,
There are known knowns.
There are things we know we know.
We also know
There are known unknowns.
That is to say
We know there are some things
We do not know.
But there are also unknown unknowns,
The ones we don't know
We don't know.¹¹⁶

¹¹⁶ D. Rumsfeld, US Department of Defence news briefing, 12 February 2002, <dod.gov>.

